

WHAT IS CLAIMED IS:

1. A method for screening nucleic acid binding elements (NABEs), said method comprising :

5 (a) contacting nucleic acid binding factors (NABFs) with NABEs under conditions to promote specific binding interactions therebetween;

(b) identifying complexes formed between said NABEs and said NABFs (NABE-NABF complexes);

10 (c) separating said NABF from said NABE-NABF complexes to obtain NABEs that bind to NABFs;

(d) marking said NABEs obtained in (c) (marked NABEs);

15 (e) contacting said marked NABEs with probes of known nucleic acid binding elements (NABE-ps) bound to a support under conditions to promote hybridization therebetween; and

20 (f) analyzing the hybridization in (e) in order to identify said marked NABEs.

2. A method according to claim 1, wherein said NABEs are extracted from a cell.

25 3. A method for screening nucleic acid binding elements (NABEs) that are differentially active in modified cells, said method comprising :

30 (a) contacting nucleic acid binding factors (NABFs) with NABEs derived from a modified cell under conditions to promote specific binding interactions therebetween;

- (b) identifying complexes formed in (a) between said NABEs and said NABFs (NABE-NABF complexes);

(c) separating said NABFs from said NABE-NABF complex to obtain
5 NABEs that bind to NABFs;

(d) marking said NABEs obtained in (c) (marked NABEs);

10 (e) contacting said marked NABEs with probes of known nucleic acid binding elements (NABE-ps) bound to a support under conditions to promote hybridization therebetween; and

(f) analyzing the hybridization in (e) in order to identify said marked NABEs that are differentially active in the modified cell.

4. A method according to claim 3, further comprising:

from a non-modified cell (non-modified cell NABES) under conditions to promote specific binding interactions therebetween;

(h) identifying complexes formed in (i) between said non-modified cell NABEs and said NABFs (non-modified cell NABE-NABF complexes);

(i) separating said NABF from said non-modified cell NABE-NABF complex to obtain non-modified cell NABEs that bind with NABFs;

(j) marking said non-modified cell NABEs obtained in (i) with a marker that is different than the marker used to mark said modified cell NABEs (marked non-modified cell NABEs);

- (k) contacting said marked non-modified cell NABEs with said NABE-ps bound to a support under conditions to promote hybridization; and
- 5 (l) comparing the amount of hybridization in (v) with the amount of hybridization in (e) in order to identify the differentiated activity of said marked NABEs derived from the modified cell.
- 10 5. A method according to any one of claims 1-4, wherein said contacting in (a) includes incubating a pool of said NABEs with a pool of said NABFs in conditions conducive to the formation of said NABE-NABF complexes.
- 15 6. A method according to any one of claims 1-4, wherein said identification in (b) includes submitting said contacted NABFs and NABEs in (a) to an electrophoresis separation.
- 20 7. A method according to claim 6, wherein said electrophoresis separation is part of an electromobility shift assay (EMSA).
8. A method according to any one of claims 1-4, wherein said separation in (c) includes purification of said NABE-NABF complexes in order to eliminate the NABFs bound to said NABEs.
- 25 9. A method according to any one of claims 1-4, wherein said marking in (d) includes labelling said NABEs with a terminal primer marker.
10. A method according to claim 9, wherein said terminal primer marker is a fluorescent or radioactive label.
- 30 11. A method according to any one of claims 1-4, wherein said NABE-ps are bound to a microarray or microbeads.

12. A method according to any one of claims 1-4, wherein said NABEs contain binding sites for transcription factors.
13. A method as defined in claim 12, wherein said transcription factors include c-
5 Rel, E2F-1, Egr-1, ER, NF κ B p50, p53, Sp1 and YY1.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100